Attorney Docket Number: FSP0241
Client Reference Number: 243264US
Title: coaxial communication active tap device and distribution system
Application Number: 10/805,226

Claims

This listing of claims replaces all prior versions and listings of claims in the present application.

1. (Original) An active signal tap device, comprising:
an input with a minimum input level of −4 dBmV;
at least one signal tap output; and
an active component connecting the input to the at least one signal tap output and configured to provide an RF output of approximately 18 dBmV with a maximum DC power consumption of no more than 0.5 Watts.

2. (Original) The active signal tap device of claim 1, wherein said active component comprises:
a noise figure of no more than 3 dB.

3. (Original) The active signal tap device of claim 1, wherein said active component comprises:
a bandwidth of 20 MHz-1.5 GHz.

4. (Original) The active signal tap device of claim 1, wherein said active component comprises:
a gain configured to provide an 18 dBmV output signal at said at least one signal tap output.

5. (Original) The active signal tap device of claim 1, wherein said active component comprises:
an input impedance of approximately 75 ohms; and
an output impedance of approximately 75 ohms.

6. (Original) The active signal tap device of claim 1, wherein said active component comprises:
discrete components including silicon or GaAs based transistors.

7. (Original) The active signal tap device of claim 1, wherein said active component comprises:
a MMIC component.

8. (Original) The active signal tap device of claim 7, wherein said MMIC component comprises:
discrete components including silicon or GaAs based transistors.

9. (Original) The active signal tap device of claim 1, comprising:
a first AC power passing choke;
a second AC power passing choke connected to the first AC power passing choke;
an AC output tap between the first and second AC power passing chokes;
an AC to DC power supply connected to the AC output tap;
an amplifier connected to the DC power supply;
a circuit in parallel to the two AC power passing chokes, said circuit comprising a first capacitor connected to a directional coupler connected to second capacitor;
a first diplex port connected to an output of the directional coupler and comprising a first high-pass filter and a first low-pass filter;
a first attenuator connecting an output of the first high-pass filter to an input to the amplifier; and
a second diplex port connected to an output of the amplifier and comprising a second high-pass filter and a second low-pass filter.

10. (Original) The active signal tap device of claim 9, wherein an output of said second diplex port is connected to said at least one active tap output.

11. (Original) The active signal tap device of claim 9, further comprising:
a first signal splitter connected to an output of the second diplex port and having a plurality of first signal splitter output ports;
a set of second signal splitters connected to the first signal splitter, each of said second signal splitters having a plurality of second signal splitter output ports; and

a plurality of tap ports, each of said plurality of tap ports connecting a respective second signal splitter output port to a respective one of said at least one signal tap output.

12. (Original) The active signal tap device of claim 11, wherein
said plurality of first signal splitter output ports comprise two first signal splitter output ports; and
said plurality of second signal splitter output ports comprise two second signal splitter output ports.

13. (Original) The active signal tap device of claim 11, wherein said plurality of first signal splitter output ports comprise:
two first signal splitter output ports.

14. (Original) The active signal tap device of claim 11, wherein said plurality of second signal splitter output ports comprise
two second signal splitter output ports.

15. (Original) The active signal tap device of claim 9, further comprising one of:
a signal output port connected to an output of said second power passing choke; and
a terminus connected to an output of said second power passing choke.

16. (Original) The active signal tap device of claim 9, further comprising:
a feedback circuit connecting the second low-pass filter to the first low-pass filter.

17. (Original) The active signal tap device of claim 16, wherein said feedback circuit comprises:
a second attenuator between the first and second low-pass filters.

18. (Original) The active signal tap unit of claim 1, further comprising:
an environmentally secure housing configured to house said active component.

19. (Original) The active signal tap unit of claim 18, wherein the environmentally secure housing comprises:

RFI protection.

20. (Original) The active signal tap unit of claim 18, wherein the environmentally secure housing comprises one of:

a housing configured to be mounted indoors; and

a housing configured to be strand mounted outdoors.

21. (Original) The active signal tap unit of claim 1, wherein the active component comprises one of:

an active component which can be cable powered; and

an active component which can be AC line powered.

22. (Original) A signal distribution system, comprising:

one of a passive tap and a first active signal tap; and

a second active signal tap connected to the first active signal tap, said first and second active signal taps each including

an input with a minimum input level of −4 dBmV;

at least one signal tap output; and

an active component connecting the input to the at least one signal tap output and configured to provide an RF output of approximately 18 dBmV with a maximum DC power consumption of no more than 0.5 Watts.

23. (Original) The signal distribution system of claim 22, wherein said active component comprises:

a noise figure of no more than 3 dB.

24. (Original) The signal distribution system of claim 22, wherein said active component comprises:

a bandwidth of 20 MHz-1.5 GHz.

25. (Original) The signal distribution system of claim 22, wherein said active component comprises:

a gain configured to provide an 18 dBmV output signal at said at least one signal tap output.

26. (Original) The signal distribution system of claim 22, wherein said active component comprises:

an input impedance of approximately 75 ohms; and

an output impedance of approximately 75 ohms.

27. (Original) The signal distribution system of claim 22, wherein said active component comprises:

discrete components including silicon or GaAs based transistors.

28. (Original) The signal distribution system of claim 22, wherein said active component comprises:

a MMIC component.

29. (Original) The signal distribution system of claim 22, wherein said MMIC component comprises:

discrete components including silicon or GaAs based transistors.

30. (Original) The signal distribution system of claim 22, wherein each of said first and second active taps comprise:

a first AC power passing choke;

a second AC power passing choke connected to the first AC power passing choke;

an AC output tap between the first and second AC power passing chokes;

An AC to DC power supply connected to the AC output tap;

an amplifier connected to the DC power supply;

a circuit in parallel to the two AC power passing chokes, said circuit comprising a first capacitor connected to a directional coupler connected to second capacitor;

a first diplex filter port connected to an output of the directional coupler and comprising a first high-pass filter and a first low-pass filter;

a first attenuator connecting an output of the first high-pass filter to an input to the amplifier; and

a second diplex filter port connected to an output of the amplifier and comprising a second high-pass filter and a second low-pass filter.

31. (Original) The signal distribution system of claim 36, wherein an output of said second diplex filter port is connected to said at least one active tap output.

32. (Original) The signal distribution system of claim 30, wherein at least one of said first and second active taps further comprise:

a first signal splitter connected to an output of the second diplex filter port and having a plurality of first signal splitter output ports;

a set of second signal splitters connected to the first signal splitter, each of said second signal splitters having a plurality of second signal splitter output ports; and

a plurality of tap ports, each of said plurality of tap ports connecting a respective second signal splitter output port to a respective one of said at least one signal tap output.

33. (Original) The signal distribution system of claim 22, further comprising:

a signal source connected to said first active tap.

34. (Original) The signal distribution system of claim 22, wherein one of the first and second active tap comprises:

an environmentally secure housing configured to house said corresponding active component.

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35. (Original) The signal distribution system of claim 34, wherein the environmentally secure housing comprises:
RFI protection.

36. (Original) The signal distribution system of claim 34, wherein the environmentally secure housing comprises one of:
a housing configured to be mounted indoors; and
a housing configured to be strand mounted outdoors.

37. (Original) The signal distribution system of claim 22, wherein one of the first and second active tap comprises one of:
an active component which can be cable powered; and
an active component which can be AC line powered.

38. (Original) A method for actively amplifying a signal, comprising:
passing an RF signal from an input port to an output port;
tapping said input RF signal to provide a tapped signal;
amplifying said tapped signal with an active tap configured to consume no more than 0.5 Watts while providing a noise figure of no more than 3 dB and a bandwidth of 20 MHz-1.5 GHz to provide an amplified tap signal; and
passing said amplified tap signal to a tap output.

39. (Original) The method of claim 38, wherein said step of amplifying with an active tap comprises:
amplifying with discrete components including silicon or GaAs based transistors.

40. (Original) The method of claim 38, wherein said step of amplifying with an active tap comprises:

amplifying with a MMIC component.

41. (Original) The method of claim 40, wherein said step of amplifying with a MMIC component comprises:
amplifying with discrete components including silicon or GaAs based transistors.

42. (Original) The method of claim 38, wherein said step of passing said amplified tap signal comprises:
splitting said amplified tap signal.

43. (Original) The method of claim 38, further comprising:
passing a feedback signal from said tap output to said input port.

44. (Original) A method for distributing an RF signal via cable, comprising:
passing an RF signal through a first active tap; and
passing said RF signal through a second active tap, said second active tap either in series or in parallel with said first active tap, wherein each of said steps of passing comprise:
tapping an input RF signal to provide a tapped signal;
amplifying said tapped signal with an active component consuming no more than 0.5 Watts and providing a noise figure of no more than 3 dB and a bandwidth of 20 MHz-1.5 GHz to provide an amplified tap signal; and
outputting said amplified tap signal to a tap output.

45. (Original) The method of claim 44, wherein said step of amplifying comprises:
amplifying with discrete components including silicon or GaAs based transistors.

46. (Original) The method of claim 44, wherein said step of amplifying comprises:
amplifying with a MMIC component.

47. (Original) The active signal tap device of claim 46, wherein said step of amplifying with a MMIC component comprises:
amplifying with discrete components including silicon or GaAs based transistors.

48. (Original) The method of claim 44, wherein said step of outputting said amplified tap signal comprises:
splitting said amplified tap signal.

49. (Original) The method of claim 44, wherein at least one of said steps of passing comprise:
passing a feedback signal from said tap output to said input port.

50. (Original) The method of claim 44, wherein said step of amplifying said tapped signal with an active tap comprises:
amplifying said tapped signal with an active tap housed within an environmentally secure housing.

51. (Original) The method of claim 44, wherein said step of amplifying said tapped signal with an active tap comprises:
amplifying said tapped signal with an active tap housed in a housing provided with RFI protection.

52. (Original) The method of claim 44, wherein said step of amplifying said tapped signal with an active tap comprises one of:
amplifying said tapped signal with an active tap housed in a housing configured to be mounted indoors; and
amplifying said tapped signal with an active tap housed in a housing configured to be strand mounted outdoors.

53. (Original) The method of claim 44, wherein said step of amplifying said tapped signal with an active tap comprises one of:
amplifying said tapped signal with an active tap which can be cable powered; and

amplifying said tapped signal with an active tap which can be AC line powered.

54. (Original) A system for actively amplifying a signal, comprising:
means for passing an RF signal from an input port to an output port;
means for tapping said input RF signal to provide a tapped signal;
means for amplifying said tapped signal with an active tap configured to consume no more than 0.5 Watts while providing a noise figure of no more than 3 dB and a bandwidth of 20 MHz-1.5 GHz to provide an amplified tap signal; and
means for passing said amplified tap signal to a tap output.

55. (Original) The system of claim 54, wherein said means for amplifying comprises:
means for amplifying with discrete components including silicon or GaAs based transistors.

56. (Original) The system of claim 54, wherein said step of amplifying comprises:
means for amplifying with a MMIC component.

57. (Original) The system of claim 56 wherein said means for amplifying with a MMIC component comprises:
means for discrete components including silicon or GaAs based transistors.

58. (Original) The system of claim 54, wherein said step of passing said amplified tap signal comprises:
means for splitting said amplified tap signal.

59. (Original) The system of claim 54, further comprising:
means for passing a feedback signal from said tap output to said input port.

60. (Original) The system of claim 54, wherein said means for amplifying said tapped signal with an active tap comprises:

means for amplifying said tapped signal with an active tap housed within an environmentally secure housing.

61. (Original) The system of claim 54, wherein said means for amplifying said tapped signal with an active tap comprises:
means for amplifying said tapped signal with an active tap housed in a housing provided with RFI protection.

62. (Original) The system of claim 54, wherein said means for amplifying said tapped signal with an active tap comprises one of:
means for amplifying said tapped signal with an active tap housed in a housing configured to be mounted indoors; and
means for amplifying said tapped signal with an active tap housed in a housing configured to be strand mounted outdoors.

63. (Original) The system of claim 54, wherein said means for amplifying said tapped signal with an active tap comprises one of:
means for amplifying said tapped signal with an active tap which can be cable powered; and
means for amplifying said tapped signal with an active tap which can be AC line powered.

64. (Original) A system for distributing an RF signal via cable, comprising:
means for passing an RF signal through a first active tap; and
means for passing said RF signal through a second active tap, said second active tap either in series or in parallel with said first active tap, wherein each of said means for passing comprise:
means for tapping an input RF signal to provide a tapped signal;
means for amplifying said tapped signal while consuming no more than 0.5 Watts and providing a noise figure of no more than 3 dB and a bandwidth of 20 MHz-1.5 GHz to provide an amplified tap signal; and
means for outputting said amplified tap signal to a tap output.

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65. (Original) The system of claim 64, wherein said means for amplifying comprises:
means for amplifying with discrete components including silicon or GaAs based transistors.

66. (Original) The system of claim 64, wherein said step of amplifying comprises:
means for amplifying with a MMIC component.

67. (Original) The system of claim 66, wherein said means for amplifying with a MMIC component comprises:
means for amplifying with discrete components including silicon or GaAs based transistors.

68. (Original) The system of claim 64, wherein said step of outputting said amplified tap signal comprises:
means for splitting said amplified tap signal.

69. (Original) The system of claim 64, wherein at least one of said steps of passing comprise:
means for passing a feedback signal from said tap output to said input port.

70. (Original) The system of claim 64, wherein said means for amplifying said tapped signal with an active tap comprises:
means for amplifying said tapped signal with an active tap housed within an environmentally secure housing.

71. (Original) The system of claim 64, wherein said means for amplifying said tapped signal with an active tap comprises:
means for amplifying said tapped signal with an active tap housed in a housing provided with RFI protection.

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72. (Original) The system of claim 64, wherein said means for amplifying said tapped signal with an active tap comprises one of:

means for amplifying said tapped signal with an active tap housed in a housing configured to be mounted indoors; and

means for amplifying said tapped signal with an active tap housed in a housing configured to be strand mounted outdoors.

73. (Original) The system of claim 64, wherein said means for amplifying said tapped signal with an active tap comprises one of:

means for amplifying said tapped signal with an active tap which can be cable powered; and

means for amplifying said tapped signal with an active tap which can be AC line powered.